

## **EXHIBIT 10**



**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

TQ DELTA, LLC,

*Plaintiff,*

v.

COMMSCOPE HOLDING COMPANY, INC.,  
COMMSCOPE INC., ARRIS US HOLDINGS,  
INC., ARRIS SOLUTIONS, INC., ARRIS  
TECHNOLOGY, INC., and ARRIS  
ENTERPRISES, LLC,

*Defendants.*

Civil Action No. 2:21-cv-00310-JRG

**COMMSCOPE'S PRELIMINARY INVALIDITY CONTENTIONS**

Pursuant to Rule 3-3 of the Local Patent Rules ("P. R.") of the Eastern District of Texas, Defendants CommScope Holding Company, Inc., CommScope, Inc., ARRIS US Holdings, Inc., ARRIS Solutions, Inc., ARRIS Technology, Inc., and ARRIS Enterprises, LLC (collectively, "CommScope" or "Defendants") hereby provide their Invalidity Contentions with respect to the claims identified by Plaintiff TQ Delta, LLC in its Disclosure of Asserted Claims and Infringement Contentions and Accompanying Document Production, served on November 4, 2021.

**I. PRELIMINARY STATEMENT**

In its Disclosure of Asserted Claims and Infringement Contentions, the asserted claims identified in Plaintiff's cover pleading did not match the claims in the attached exhibits mapping the claims of the patents to the alleged infringing instrumentalities. CommScope made a reasonable effort to determine which claims TQ Delta was asserting and reserves the right to

- “a multicarrier transceiver including a processor and memory operable to:” (’348 Patent, claim 1)
- “wherein the transceiver is operable to retransmit the packet using the forward error correction encoder and the interleaver” (’348 Patent, claim 3)
- “a multicarrier transceiver including a processor and memory operable to:” (’348 Patent, claim 9)
- “wherein the transceiver is operable to receive a retransmitted packet using the forward error correction decoder and the deinterleaver” (’348 Patent, claim 11)
- “A transceiver operable” (’055 Patent, claim 11)

The asserted claims of the EDTX – Family 2 Patents (and all other claims in the asserted patent that include or depend from any claims that include any of the above limitations) are invalid because they fail to particularly point out and distinctly claim the subject matter that the applicants regarded as their invention.

#### **IV. INVALIDITY CONTENTIONS FOR EDTX – FAMILY 2**

##### **A. INVALIDITY UNDER 35 U.S.C. § 102 AND/OR 35 U.S.C. § 103**

In accordance with P. R. 3-3(b) and (c), claims 16 and 22 of the ’988 Patent and claims 10-12 of the ’354 Patent (the “EDTX – Family 2 Patents”) are anticipated and/or rendered obvious by at least the following references:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
6,516,027	U.S.	2/4/2004 (application filed 2/18/1999)	Kapoor

Publications			
Title	Date of Publication	Author and/or Publisher	Short Cite
TNETD8000 Very High Bit-Rate Digital Subscriber Line (VDSL) Chipset Hardware and Software Evaluation Module (EVM) User's Guide	November 1999	TEXAS INSTRUMENTS	TNETD8000 User Guide
Providing the Right Solution for VDSL	July 16, 1999	TEXAS INSTRUMENTS, White Paper,	Providing the Right Solution for VDSL

The patents, publications, and references identified above qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g). The charts identified as Exhibits E-01 through E-11 and F-01 through F-07 demonstrate how the asserted claims of the EDTX – Family 2 Patents are anticipated and/or rendered obvious by the references above. Each chart identifies certain prior art to the asserted claims of the EDTX – Family 2 Patents and identifies at least one citation in the prior art reference where each claim element of the asserted claims is disclosed. Though the charts provide illustrative citations to where each claim element may be found in the prior art, the cited references may contain additional disclosures of each claim element as well, and CommScope reserves the right to assert that any claim element is disclosed in other portions of the cited references. In addition, CommScope identifies, and incorporates here by reference, all prior art of record in the prosecution history of the EDTX – Family 2 Patents (and all related patents and applications), and all prior art ITU-T Recommendations or other industry publications (such as ATM Forum, Broadband Forum, or similar groups' publications, reports, or specifications), any of which may anticipate and/or render the asserted claims of the EDTX – Family 2 Patents obvious. Further, CommScope identifies any TQ Delta patents that claim the same priority date as the

Publications			
Title	Date of Publication	Author and/or Publisher	Short Cite
Complementary Series	April 1961	M.J.E. Golay, IRE Trans. on Information Theory	Golay
A New Phasing Scheme for Multitone Signal Systems to Reduce Peak-to-Average Power Ratio	1997	S. Narahashi and T. Nojima, Elecs. and Commn's in Japan	
A Method to Reduce the Probability of Clipping in DMT-Based Transceivers	October 1996	Mestdagh, D.J.G and P.M.P. Spruyt, IEEE Trans. on Communications	
Reducing the Peak-to-Average Power Ratio of Multicarrier Modulation by Selected Mapping	October 1996	Bauml, R.W. et al., Electronics Letters	
A Novel Peak Power Reduction Scheme for OFDM	1997	Muller, S.H. and J.B. Huber, IEEE	
Network Migration	December 1997	American National Standards Institute	TR-004

Products			
Title	Date of Relevant Publications	Corporation	Short Cite
Virtuoso chipset	4/22/1996, 8/3/1999, 12/1/1999, 11/1/1999, 8/13/2002,	Amati Communications Corporation/Texas Instruments	Virtuoso
TNETD8000 chipset	November 1999	Texas Instruments	TNETD8000 chipset

<b>Products</b>			
<b>Title</b>	<b>Date of Relevant Publications</b>	<b>Corporation</b>	<b>Short Cite</b>
TNETD8000 EVM	November 1999	Texas Instruments	TNETD8000 EVM

In addition, any of the foregoing anticipatory or secondary prior art references listed above may be combined with any of the prior art of record in the prosecution history of the EDTX – Family 2 Patents (and all related patents and applications), or with any prior art ITU-T Recommendations or other industry publications (such as ATM Forum, Broadband Forum, or similar groups’ publications, reports or specifications), to render the asserted claims of the EDTX – Family 2 Patents obvious. Further, any of the foregoing prior art listed above may be combined with one another to render the asserted claims of the EDTX – Family 2 Patents obvious.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts. The Supreme Court identified in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), a number of rationales that would support a finding that the asserted claims are obvious:

- A. the Asserted Claims combine prior art elements according to known methods to yield predictable results;
- B. the Asserted Claims involve the simple substitution of one known element for another to obtain predictable results;
- C. the Asserted Claims involve the use of a known technique to improve similar devices (methods, or products) in the same way;
- D. the Asserted Claims apply a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- E. the Asserted Claims involve combinations of prior art references that would have been “obvious to try”—i.e., a person of ordinary skill in the art could have reached the Asserted Claims by choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

- “A multicarrier communications transceiver operable to receive a multicarrier symbol comprising a first plurality of carriers” (’354 Patent, claim 10)
- “wherein the first SNR margin provides more robust reception than the second SNR margin” (’354 Patent, claim 10)

The asserted claims of the EDTX – Family 2 Patents (and all other claims in the asserted patent that include or depend from any claims that include any of the above limitations) are invalid because they fail to particularly point out and distinctly claim the subject matter that the applicants regarded as their invention.

## **V. INVALIDITY CONTENTIONS FOR DDE – FAMILY 1**

### **A. INVALIDITY UNDER 35 U.S.C. § 102 AND/OR 35 U.S.C. § 103**

In accordance with P. R. 3-3(b) and (c), claims 17, 18, 19, 36, 37, 38, and 40 of the ’686 Patent (the “DDE – Family 1 Patent”) are anticipated and/or rendered obvious by at least the following references:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
6,445,730	U.S.	9/3/2002	Greszczuk
6,631,120	U.S.	10/7/2003	Milbrandt
6,636,603	U.S.	10/21/2003	Milbrandt 603
6,606,719	U.S.	8/12/2003	Ryckebusch
6,434,119	U.S.	8/13/2002	Wiese
6,865,232	U.S.	3/8/2005	Isaksson
6,219,378	U.S.	4/17/2001	Wu
4,679,227	U.S.	7/7/1987	Hughes-Hartogs

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
6,788,705	U.S.	9/7/2004	Rango
6,366,644	U.S.	4/2/2002	Sisk
4,438,511	U.S.	3/20/1984	Baran
GB 2,300,546	U.K.	6/11/1996	Bae
5,838,268	U.S.	11/17/1998	Frenkel
6,549,512	U.S.	4/15/2003	Wu 512
5,490,199	U.S.	2/6/1996	Fuller 199
5,299,257	U.S.	3/29/1994	Fuller 257

Publications			
Title	Date of Publication	Author and/or Publisher	Short Cite
ANSI T1.413-1998, Network and Customer Installation Interfaces – Asymmetric Digital Subscriber Line (ADSL) Metallic Interface	6/5/1998	American National Standards Institute	T1.413-1998
Asymmetric digital subscriber line transceivers	6/22/1999	International Telecommunications Union	G.992.1
Telebit T2500 Reference Manual	1990	Telebit Corporation	T2500
Data Communications Networking Devices: Operation, Utilization and Lan and Wan	January 1999	Wiley	Held



materials describing the prior art, that may be identified through the course of ongoing discovery and investigation.

To the extent that a reference above is found to be missing a limitation of the asserted claims of the DDE – Family 1 Patent, any one of the prior art references identified above may be combined with any one or more of the other references identified above and the following references, all of which qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g), to render the asserted claims of the DDE – Family 1 Patent obvious under 35 U.S.C. § 103:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
5,862,451	U.S.	1/22/1996	Grau
6,590,893	U.S.	7/8/2003	Hwang
6,064,692	U.S.	5/16/2000	Chow
6,144,696	U.S.	11/11/2007	Shively
6,606,719	U.S.	8/12/2003	Rykebusch
6,219,378	U.S.	4/17/2001	Wu
6,631,120	U.S.	10/7/2003	Milbrandt
4,679,227	U.S.	7/7/1987	Hughes-Hartogs
5,838,268	U.S.	11/17/1998	Frenkel
4,438,511	U.S.	3/20/1984	Baran
5,910,970	U.S.	6/8/1999	Lu
6,072,779	U.S.	6/6/2000	Tzannes
6,252,900	U.S.	6/26/2001	Liu
6,253,060	U.S.	6/26/2001	Komara

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
6,363,128	U.S.	3/26/2002	Isaksson 128
6,438,174	U.S.	8/20/2002	Isaksson 174
6,442,211	U.S.	8/27/2002	Hampel
6,633,545	U.S.	10/14/2003	Milbrandt 545
6,636,603	U.S.	10/21/2003	Milbrandt 603
6,686,879	U.S.	2/3/2004	Shattil
6,801,570	U.S.	10/5/2004	Yong
6,829,307	U.S.	12/7/2004	Hoo
6,847,702	U.S.	1/25/2005	Czerwiec
6,892,339	U.S.	5/10/2005	Polk
7,042,900	U.S.	5/9/2006	Czerwiec 900
5,533,008	U.S.	7/2/1996	Grube
6,459,678	U.S.	10/1/2002	Herzberg
7,336,627	U.S.	2/26/2008	Hasegawa
6,266,347	U.S.	7/24/2001	Amrany
6,424,674	U.S.	7/23/2002	Linz
6,493,395	U.S.	12/10/2002	Isaksson 395
6,456,649	U.S.	9/24/2002	Isaksson 649
6,366,554	U.S.	4/2/2002	Isaksson 554
6,005,893	U.S.	12/21/1999	Hyll
5,521,906	U.S.	5/28/1996	Grube 906
6,697,626	U.S.	2/24/2004	Edison

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
6,359,926	U.S.	3/19/2002	Isaksson 926
6,052,411	U.S.	4/18/2000	Mueller
7,570,686	U.S.	8/4/2009	Krinsky 686
7,835,430	U.S.	11/16/2010	Krinsky 430
7,889,784	U.S.	2/15/2011	Krinsky 784
8,238,412	U.S.	8/7/2012	Krinsky 412
8,432,956	U.S.	4/30/2013	Krinsky 956
5,128,619	U.S.	7/7/1992	Bjork
WO 1999/063427	W.I.P.O.	12/9/1999	Eichen
4,566,100	U.S.	1/21/1986	Mizuno
6,175,934	U.S.	1/16/2001	Hershey
6,512,789	U.S.	1/28/2003	Mirfakhrai
5,608,643	U.S.	3/4/1997	Wichter
WO 1999/026375	W.I.P.O.	5/27/1999	Hakanson
6,725,176	U.S.	4/20/2004	Long
5,864,602	U.S.	1/26/1999	Needle
5,964,891	U.S.	10/12/1999	Caswell
6,449,307	U.S.	9/10/2002	Ishikawa
6,064,692	U.S.	5/16/2000	Chow
WO 1997/001900	W.I.P.O.	1/16/1997	Johann
EP 0820168	E.U.	1/21/1998	Wu 168
6,177, 801	U.S.	1/23/2001	Chong

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
4,833,706	U.S.	5/23/1989	Hughes-Hartogs 706
5,790,550	U.S.	8/4/1998	Peeters 550
5,793,759	U.S.	8/11/1998	Rakib
6,646,994	U.S.	11/11/2003	Hendrichs
6,748,212	U.S.	6/8/2004	Schmutz
6,891,803	U.S.	5/10/2005	Chang
6,898,185	U.S.	5/24/2005	Agazzi
7,120,122	U.S.	10/10/2006	Starr
5,694,466	U.S.	12/2/1997	Xie
5,438,329	U.S.	8/1/1995	Gastouniotis
5,812,786	U.S.	9/22/1998	Seazholtz
WO 2000/072583	W.I.P.O.	11/30/2000	Birnbaum
WO 1998/10546 (A2)	W.I.P.O.	3/12/1998	Isaksson 546
WO 1999/18701 (A1)	W.I.P.O.	4/15/1999	Henderson 701
EP 0486229	E.U.	5/20/1992	Linguist
EP 0815655	E.U.	1/7/1998	Leitch
EP 0820168	E.U.	1/21/1998	Wu 168
EP 0957615	E.U.	11/17/1999	Polley
EP 0905948	E.U.	3/31/1999	Levin
EP 1119775	E.U.	8/1/2001	Palm
CA 2270721A1	Canada	11/6/1999	Knittel

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
GB 2319703A	U.K.	5/27/1998	Fortier

Publications			
Title	Date of Publication	Author and/or Publisher	Short Cite
Asymmetric digital subscriber line transceivers	6/22/1999	International Telecommunications Union	G.992.1
ANSI T1.413-1998, Network and Customer Installation Interfaces – Asymmetric Digital Subscriber Line (ADSL) Metallic Interface	6/5/1998	American National Standards Institute	T1.413-1998
ANSI T1.413-1995, “Network and Customer Installation Interfaces – Asymmetric Digital Subscriber Line (ADSL) Metallic Interface”	1995	American National Standards Institute	T1.413-1995
Data Communications Networking Devices: Operation, Utilization and Lan and Wan Internetworking, 4th Edition	January 1999	Wiley	Held
Providing the Right Solution for VDSL”	July 1999	Texas Instruments	Jacobsen
TR-024: DMT Line Code Specific MIB	June 1999	Broadband Forum: Technical Report	TR-024
Network Migration	December 1997	American National Standards Institute	TR-004

*Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. Jun. 16, 2015) (en banc). For example, the specification of the DDE – Family 1 Patent does not recite sufficient structure for the “message determination module” recited in claim 5 of the ’686 Patent to perform its claimed function. Moreover, to the extent that the claimed functions are accomplished merely using software, no specific algorithm is disclosed to perform the claimed function. And to the extent that the asserted claims of the DDE – Family 1 Patent do not invoke 35 U.S.C. § 112, ¶ 6 (pre-AIA), those claims are invalid for merely claiming the function of an apparatus.

## **VI. INVALIDITY CONTENTIONS FOR DDE – PATENT FAMILY 2**

### **A. INVALIDITY UNDER 35 U.S.C. § 102 AND/OR 35 U.S.C. § 103**

In accordance with P. R. 3-3(b) and (c), claims 17-18 of the ’881 Patent (the “DDE – Family 2 Patent”) are anticipated and/or rendered obvious by at least the following references:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
6,222,858	U.S.	4/24/2001	Counterman
WO 1999/039468	W.I.P.O	8/5/1999	Edvardsen
6,178,448	U.S.	1/23/2001	Gray
7,068,657	U.S.	6/27/2006	Keller-Tuberg

<b>Publications</b>			
<b>Title</b>	<b>Date of Publication</b>	<b>Author and/or Publisher</b>	<b>Short Cite</b>
Inverse Multiplexing over ATM (IMA) Specification Version 1.0	July 1997	ATM Forum Technical Committee	IMA Spec 1.0

<b>Products</b>			
<b>Title</b>	<b>Date of Relevant Publications</b>	<b>Corporation</b>	<b>Short Cite</b>
Virtuoso chipset	4/22/1996, 8/3/1999 12/1/1999, 11/1/1999, 8/13/2002,	Amati Communications Corporation/Texas Instruments	Virtuoso

The patents, publications, and references identified above qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g). The charts identified as Exhibits H-01 through H-06 demonstrate how the asserted claims of the DDE – Family 2 Patent are anticipated and/or rendered obvious by the references above. Each chart identifies certain prior art to the DDE – Family 2 Patent and identifies at least one citation in the prior art reference where each claim element of the asserted claims is disclosed. Though the charts provide illustrative citations to where each claim element may be found in the prior art, the cited references may contain additional disclosures of each claim element as well, and CommScope reserves the right to assert that any claim element is disclosed in other portions of the cited references. In addition, CommScope identifies, and incorporates here by reference, all prior art of record in the prosecution history of the DDE – Family 2 Patent (and all related patents and applications), and all prior art ITU-T Recommendations or other industry publications (such as ATM Forum, Broadband Forum, or similar groups' publications, reports, or specifications), any of which may anticipate and/or render the asserted claims of the DDE – Family 2 Patent obvious. Further, CommScope identifies any TQ Delta patents that claim the same priority date as any of the DDE – Family 2 Patent and disclose the same subject matter and for which a terminal disclaimer was not filed during prosecution, under the doctrine of obviousness-type double patenting. Additional evidence regarding the features and elements of prior art references may be provided by witness testimony, or by additional

**VII. INVALIDITY CONTENTIONS FOR DDE – PATENT FAMILY 3****A. INVALIDITY UNDER 35 U.S.C. § 102 AND/OR 35 U.S.C. § 103**

In accordance with P. R. 3-3(b) and (c), the asserted claims of the '048 Patent and the '882 Patent (the “DDE – Family 3 Patents”) are anticipated and/or rendered obvious by at least the following references:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
2005/0034046	U.S.	2/10/2005	Berkmann
5,912,898	U.S.	6/15/1999	Khoury
6,707,822	U.S.	3/16/2004	Fadavi-Ardekani
5,063,533	U.S.	11/5/1999	Erhart
7,269,029	U.S.	1/24/2002	Mazzoni
6,484,283	U.S.	11/19/2002	Stephen
7,200,169	U.S.	04/03/2007	Suzuki
7,269,208	U.S.	1/24/2002	Mazzoni
6,775,320	U.S.	8/10/2004	Tzannes 320
6,381,728	U.S.	4/30/2002	Kang
5,751,741	U.S.	5/12/1998	Voith

<b>Publications</b>			
<b>Title</b>	<b>Date of Publication</b>	<b>Author and/or Publisher</b>	<b>Short Cite</b>
VDSL2 - Constraining the Interleaver Complexity	June 2004	International Telecommunications Union –	LB-031



Publications			
Title	Date of Publication	Author and/or Publisher	Short Cite
		Telecommunication Standardization Sector	
G.vdsl: Adaptive impulse noise protection	June 2004	International Telecommunications Union – Telecommunication Standardization Sector	LB-033
Very High Speed Digital Subscriber Line Transceivers	6/13/2004	International Telecommunications Union	G.993.1
Splitterless asymmetric digital subscriber line (ADSL) transceivers	7/1/1999	International Telecommunications Union	G.992.2
Asymmetric digital subscriber line transceivers	6/22/1999	International Telecommunications Union	G.992.1

Products			
Title	Date of Relevant Publications	Corporation	Short Cite
Amati Communications Corporation synchronized discrete multitone products	4/22/1996, 8/3/1999, 12/1/1999, 11/1/1999, 8/13/2002,	Amati Communications Corporation/Texas Instruments	SDMT Products

Specific combinations that render the asserted claims of the DDE – Family 3 Patents obvious under 35 U.S.C. § 103 using these references are set forth in Exhibits I-01 through I-12 and J-01 through J-11. CommScope reserves the right to rely on the references listed above for

motivation to combine, the state of the art and/or the background knowledge of one of ordinary skill in the art.

The patents, publications, and references identified above qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g). The charts identified as Exhibits I-01 through I-12 and J-01 through J-11 demonstrate how the asserted claims of the DDE – Family 3 Patents are anticipated and/or rendered obvious by the references above. Each chart identifies certain prior art to the DDE – Family 3 Patents and identifies at least one citation in the prior art reference where each claim element of the asserted claims is disclosed. Though the charts provide illustrative citations to where each claim element may be found in the prior art, the cited references may contain additional disclosures of each claim element as well, and CommScope reserves the right to assert that any claim element is disclosed in other portions of the cited references. In addition, CommScope identifies, and incorporates here by reference, all prior art of record in the prosecution history of the DDE – Family 3 Patents (and all related patents and applications), and all prior art ITU-T Recommendations or other industry publications (such as ATM Forum, Broadband Forum, or similar groups' publications, reports, or specifications), any of which may anticipate and/or render the asserted claims of the DDE – Family 3 Patents obvious.

To the extent that a reference above is found to be missing a limitation of the asserted claims of the DDE – Family 3 Patents, any one of the prior art references identified above may be combined with any one or more of the following references, all of which qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g), to render the asserted claims of the DDE – Family 3 Patents obvious under 35 U.S.C. § 103:

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
2003/0179770	U.S.	9/25/2003	Reznice
2005/0034046	U.S.	2/10/2005	Berkmann
2005/0254441	U.S.	11/17/2005	Levi
2003/0088821	U.S.	5/8/2003	Yokokawa
2003/0093750	U.S.	5/15/2003	Cameron
2001/0039637	U.S.	11/8/2001	Bengough
5,063,533	U.S.	11/5/1991	Erhart
5,563,915	U.S.	10/8/1996	Stewart
5,751,741	U.S.	5/12/1998	Voith
5,757,416	U.S.	5/26/1998	Birch
5,867,400	U.S.	2/2/1999	El-Ghoroury
5,912,898	U.S.	6/15/1999	Khoury
5,968,200	U.S.	10/19/1999	Amrany
5,991,857	U.S.	11/23/1999	Koetje
6,151,690	U.S.	11/21/2000	Peeters
6,392,572	U.S.	5/21/2002	Shiu
6,480,976	U.S.	11/12/2002	Pan
6,484,283	U.S.	11/19/2002	Stephen
6,553,534	U.S.	4/22/2003	Yonge
6,704,848	U.S.	3/9/2004	Song
6,922,444	U.S.	7/26/2005	Cai
6,988,234	U.S.	1/17/2006	Han

the DDE – Family 4 Patent (and all related patents and applications), the applicant’s admitted prior art, including admissions in U.S. Provisional Application 60/164,134, and all prior art ITU-T Recommendations or other industry publications (such as ATM Forum, Broadband Forum, or similar groups’ publications, reports, or specifications), any of which may anticipate and/or render the asserted claim obvious. Further, CommScope identifies any TQ Delta patents that claim the same priority date as the DDE – Family 4 Patent and disclose the same subject matter and for which a terminal disclaimer was not filed during prosecution, under the doctrine of obviousness-type double patenting. This includes, but is not limited to, U.S. Patent No. 7,471,721 and U.S. Patent No. 8,218,610. Additional evidence regarding the features and elements of prior art references may be provided by witness testimony, or by additional documents and materials describing the prior art, that may be identified through the course of ongoing discovery and investigation.

To the extent that a reference above is found to be missing a limitation of the asserted claim, any one of the prior art references identified above may be combined with one another or with any one or more of the following references, all of which qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g), to render the asserted claim obvious under 35 U.S.C. § 103:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
5,694,415	U.S.	12/2/1997	Suzuki 415
6,590,860	U.S.	7/8/2003	Sakoda
6,310,869	U.S.	10/30/2001	Holtzman
5,682,376	U.S.	10/28/1997	Hayashino

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
6,963,599	U.S.	11/8/2005	Dunn
6,590,893	U.S.	7/8/2003	Hwang
6,625,219	U.S.	9/23/2003	Stopler
EP 0895389 (A2)	E.U.	2/3/1999	Williams
4,924,516	U.S.	5/8/1990	Bremer
6,657,949	U.S.	9/26/2000	Jones
6,301,268	U.S.	10/9/2001	Laroia
6,144,696	U.S.	11/7/2000	Shively
5,896,419	U.S.	4/20/1999	Suzuki 419
6,233,247	U.S.	5/15/2001	Alami
6,240,141	U.S.	5/29/2001	Long
6,757,299	U.S.	6/29/2004	Verma
6,507,585	U.S.	1/14/2003	Dobson
4,408,298	U.S.	10/4/1983	Ruhland
3,811,038	U.S.	5/14/1974	Reddaway
4,672,629	U.S.	6/9/1987	Beier
5,694,389	U.S.	12/2/1997	Seki
6,324,171	U.S.	11/27/2001	Lee
6,438,186	U.S.	8/20/2002	Strait
5,101,417	U.S.	12/19/2012	Richley
6,389,080	U.S.	5/14/2002	Barnes
6,081,502	U.S.	6/27/2000	Paneth

additional documents and materials describing the prior art, that may be identified through the course of ongoing discovery and investigation.

To the extent that a reference above is found to be missing a limitation of the asserted claims of the DDE – Family 6 Patents, any one of the prior art references identified above may be combined with any one or more of the following references, all of which qualify as prior art under 35 U.S.C. §§ 102(a), 102(b), 102(e), and/or 102(g), to render the asserted claims of the DDE – Family 6 Patents obvious under 35 U.S.C. § 103:

<b>Patents and Patent Applications</b>			
<b>Patent or Application No.</b>	<b>Country of Origin</b>	<b>Date of Issue or Publication</b>	<b>Short Cite</b>
7,940,798	U.S.	5/10/2011	Puputti
6,182,264	U.S.	1/30/2001	Ott
7,706,287	U.S.	4/27/2010	Tanaka
7,343,543	U.S.	3/11/2008	Mantha
7,418,240	U.S.	8/26/2008	Hsu
7,372,901	U.S.	5/13/2008	Holcomb
7,257,764	U.S.	8/14/2007	Suzuki
7,197,067	U.S.	3/27/2007	Lusky
7,181,177	U.S.	2/20/2007	Pauli
7,170,432	U.S.	1/30/2007	Ettorre
7,024,596	U.S.	4/4/2006	Xin
6,983,414	U.S.	1/3/2006	Duschatko
6,982,964	U.S.	1/3/2006	Beering
6,928,603	U.S.	8/9/2005	Castagna

Patents and Patent Applications			
Patent or Application No.	Country of Origin	Date of Issue or Publication	Short Cite
6,772,388	U.S.	8/3/2004	Cooper
6,732,323	U.S.	5/4/2004	Mitlin
6,477,669	U.S.	11/5/2002	Agarwal
6,266,348	U.S.	7/24/2001	Gross
6,067,646	U.S.	5/23/2000	Starr
5,907,563	U.S.	5/25/1999	Takeuchi
5,828,677	U.S.	10/27/1998	Sayeed
5,638,384	U.S.	6/10/1997	Hayashi
5,546,411	U.S.	8/13/1996	Leitch
5,436,917	U.S.	7/25/1995	Karasawa
5,392,299	U.S.	2/21/1995	Rhines
4,677,622	U.S.	6/30/1987	Okamoto
4,644,544	U.S.	2/17/1987	Furaya
4,541,091	U.S.	9/10/1985	Nishida
4,716,567	U.S.	12/29/1987	Ito
2007/0258487	U.S.	11/8/2007	Puputti
2003/0193889	U.S.	10/16/2003	Jacobsen
2002/0041570	U.S.	4/11/2002	Ptasinski
2001/0022810	U.S.	9/20/2001	Joo
EP 0696108 (A1)	E.U.	2/7/1996	
EP 0923821(B1)	E.U.	6/23/1999	

**XI. P. R. 3-4 DOCUMENT PRODUCTION**

**A. Documents Related to Accused Instrumentalities Under P. R. 3-4(a)**

With the express reservations of rights to supplement its P. R. 3-4(a) disclosures, and based on its current understanding of CommScope's infringement contentions, CommScope is producing today, and will continue to supplement if necessary, documentation, Bates labeled COMMSCOPE012879–COMMSCOPE013337, sufficient to show the relevant structure and operation of the accused devices.

**B. Documents Related to Prior Art Under P. R. 3-4(b)**

Pursuant to P. R. 3-4(b), CommScope is producing concurrently with these Invalidity Contentions documents Bates labeled COMMSCOPE000002–COMMSCOPE012878, reflecting the prior art references identified above and/or in the attached charts in connection with defendants' P. R. 3-3(a) disclosures.

Dated this 13<sup>th</sup> day of January, 2022

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

The undersigned certifies that on this 13th day of January, 2022, all counsel of record are being served with a copy of this document via electronic mail.

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